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A Suggested Course of Study for Eighth Grade General Mathematics in Texas Junior High Schools

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A SUGGESTED COURSE OF STUDY FOR EIGHTH GRADE GENERAL MATHEMATICS IN TEXAS JUNIOR HIGH SCHOOLS

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Dedicated

to

my mother and father,

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whose

inspirations and encouragements

have made this thesis possible.

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INTRODUCTION

The modern-up-to-date applications of mathematics in the social, economic, and civic life of the community insure comprehension of the subject matter and sustained interest of the pupils in the work of the course. Every new topic is presented to the pupils in some natural situation similar to those in which it functions in daily life. There is social value in each unit of problem material.

In the following suggested course of study for eighth grade general mathematics in Texas Junior High Schools a suggested plan has been outlined for the subject matter proper in the teaching of eighth grade mathematics.

One of the major aims of mathematics should be the development in the pupils of an appreciation of number as a tool. As Dr. Judd points out one function of mathematics should show the pupil how the number system has enabled the human race to bring "order, arrangement and precision" to the consideration of the quantitative aspects of the environment.

The writer has used the unit of understanding as a basis of organization. The units are developed on the

basis of areas of life experiences. When arranging the order of the units or when selecting activities for developing each unit the teacher should take into consideration, abilities, interests, and plans of her group.

It is realized more and more that the problem of our schools is one of making mathematics real to the child and not principally one of teaching processes in mathematics. This is an attempt to give the child the type of mathematics that will help him to make a living if conditions prevent him from continuing in school and to build a good foundation for further study in mathematics. Emphasis is shifted from mere skill manipulation to an understanding of principles and applied problems which are real to the child.

Habits of accuracy, neatness, and of estimating and checking results should be developed.

The objectives of the eighth grade should be planned with the idea that this may be the last chance for drill in the fundamental operations, because many children drop out of school soon after this period.

This suggested course of study has been written with the present day curriculum revision movement in mind, which is now being discussed in nearly every state.

GENERAL OBJECTIVES OF JUNIOR HIGH SCHOOL MATHEMATICS

1-To make for specific knowledge useful in life.

2-To give an appreciation of the role that mathematics plays and has played in the development of civilization.

3-To enlarge and sustain the power of computation necessary in the quantity of thinking.

4-To make for accuracy and facility in the fundamental processes.

5-To give pupils a broad outlook on the mathematics field and the place of it in his later life and in his study.

6-To aid pupils in correlating their present activities with other fields of experiences as to make for recall of fundamental principles in future times.

7-To arouse interest in the pupils through conditions and materials in order that they may expand naturally and fully in ability to appreciate, understand, acknowledge, and use the relations implicated in their emotions of social and physical nature.

8-To develop skill in quantitative procedure.

9-To develop an appreciation of the function of generalization in the mathematical field.

GENERAL OBJECTIVES OF EIGHTH GRADE MATHEMATICS

1 - To promote further power of independent thinking.

2 - To give a thorough review and drill in the fundamental operations.

3 - To develop accuracy and facility in all computations.

4 - To give a comprehensive knowledge of principles in practical and business processes.

5 - To develop, further, the pupil's knowledge of commission, profit, loss, discount, interest, perimeters, areas, and volumes.

STANDARDS OF ACHIEVEMENT

1 - Ability to read and write anything in simple numbers, compound numbers, mixed numbers and fractions, both common and decimal.

2 - Sufficient arithmetical skill and knowledge to permit the pupil to continue his higher education or to enter successfully the simpler industrial work of the world; to be a decent, self-supporting citizen.

3 - The fundamental operations should measure in accuracy approximately 85%.

Unit I - Mathematics, Its Use and Meaning

Objectives of Unit

1 - To appreciate through history and use, the use and meaning of numbers.

2 - To understand the meaning and use of mathematics in everyday life and as explaining the universe.

3 - To realize the relation of mathematics to everyday life such as: gas, length, lumber, time, volume, etc.

Suggested Activities	Suggested Procedures
1 - Look up the origin of arithmetic. Make study of men in the field, such as: Galileo, Stone, Pythagoras, etc.	1 - Select members of the class to discuss different topics.
2 - Investigate uses of everyday mathematics.	2 - There are many experiences in the home, school and community.
3 - Investigate how mathematics is used in other school departments.	3 - After the information has been secured allow informal discussions.

Suggested Activities	Suggested Procedures
4 - Make a study of the occupations or business of friends and parents of the class group.	4 - What type of mathematics is of use to each? Set aside a day or two in which to invite speakers from various occupations to speak to the class on the uses each finds of mathematics. Call this day "Visitation Day."
5 - Test class as a means of determining weaknesses.	5 - Give test similar to the following: 1. Add: a. $2\frac{1}{2}$, 15 5/6, and 20 1/3. b. 32.407 and 2.07. 2. Subtract: a. 65 5/6 from $95\frac{1}{2}$. b. 1.25 from 3. 3. Multiply: a. 25 3/6 by 5 1/7. b. 3.47 by 27. 4. Divide: a. $56\frac{3}{4}$ by $7\frac{1}{2}$ b. 6.234 by 27. 5. John is selling on a commission of 4%. $987.50 are his sales. What is his commission?
6 - Have the class formulate a working word list of mathematical terms.	

Suggested References to be used in planning unit:

1 - Chapter in Textbook

2 - Brown, Shea, Champion Mathematics, Grade 8, Row Peterson, 1935.

Unit II - Graphic Representation

Objectives of Unit

1 - To increase ability in computation through the use of graphs.

2 - To make use of the graph to get and to picture information.

3 - To recognize and to realize the use of graphs in the units that are to follow and make necessary applications with them, when needed.

Suggested Activities	Suggested Procedures
1 - Discuss the meaning and use of graphs.	1 - Read and interpret some graphs.
2 - Study and make graphs.	2 - Make the bar, line distribution and circle graphs.
3 - Make a table of scores of the school's basketball or football games.	3 - Make the graph.
4 - Allow students to make individual graphs of their progress.	4 - Show by these graphs each individual's daily or weekly progress in such subjects as spelling and mathematics. The teacher may use the graphs as a class incentive.

Suggested Activities	Suggested Procedures
5 - Bring to class graph material.	5 - Such material maybe secured from newspapers and magazines.
6 - Discuss the use and value of graphic representation in educational measurements in interpreting statistical facts.	6 - Discuss and do problems involving the median, average and mode.

Suggested References to be used in planning unit:

1 - Textbook

2 - Brown and Shea, Champion Mathematics, Grade 8
Row Peterson, 1935.

Unit III - Savings and Investments

Objectives of Unit

1 - To appreciate thrift and acquire the desire to carry on saving in a systematic way.

2 - To grow in ability to understand the form of investment.

3 - To appreciate and understand the ability of making wise decisions at the correct time and place.

4 - To develop use of percentage, fractions, and decimals.

5 - To see and appreciate the real value, meaning and use of savings and investments.

Suggested Activities	Suggested Procedures
1 - Give meaning of savings and investment. Are the two terms related?	1 - If text does not fully explain the meaning of the terms use references.
2 - Study safe and risky investments.	2 - Do reference work.
3 - Savings account.	3 - Investigate those of members of the class.
4 - The teacher may see the importance of making field trips to such places as: post office, etc. Study the investment of each.	4 - In case this visit cannot be made teacher should seek other means of securing materials.
5 - Make use of newspapers.	5 - Note stock and bond report over a period of time.
6 - Work problems involving the percent cost of 130 or more shares of stock in a corporation.	6 - Refer to text.
7 - Formulate characteristics of a good investment.	7 - This may be done as a result of the pupils study of the unit.

Suggested References to be used in planning the unit:

1 - Textbook

2 - Stone and Mallory, Mathematics for Everyday Use, Sanborn, 1935.

Unit IV - Business Mathematics

Objectives of Unit

1 - To learn and to appreciate the part that mathematics plays in the world of business.

2 - To enlarge the pupils' ability in the use of the fundamental processes.

3 - To make for possibilities of future growth through the characteristics of good business.

Suggested Activities	Suggested Procedures
1 - List business activities of pupils or their relatives or friends.	1 - How is mathematics used in each type of business?
2 - Doctors, nurses, lawyers, etc. are users of mathematics.	2 - Work problems involving these business people that may be found in text or references.
3 - Use textbook and do problems involving business of everyday contact such as the family store and cafeteria.	3 - The keeping of accurate accounts, which are meaningful to the child should develop a real challenge.

Suggested References to be used in planning the unit:

1 - Textbook

2 - Curry and Procter, Business Arithmetic, South Western, 1934.

Unit V - Measurement

Objectives of the Unit

1 - 1 - To learn the meaning and use of measurement.

2 - To compare former methods and present day methods of measuring.

3 - To recognize the broad use of geometric forms in nature.

4 - To recognize and to make use of the formula in finding volumes, area, miles, and capacity.

Suggested Activities	Suggested Procedures
1 - Discuss the beginning of measurement involving such as the following: Length of arm equals a yard, days journey as measurement of distances, and length of step equals a yard.	1 - Experiment to see if the methods of measurement were more or less accurate than present day methods.
2 - There are some tables that are essential and should be learned.	2 - Such as the tables which follow should be mastered: a. Length, inch and feet inch and yard feet and mile feet and rod b. Area, square inches and square feet; square feet and square yard; square rod and square acre;

Suggested Activities	Suggested Procedures
	square acre and square mile. c. Volume, cubic inches and cubic feet; cubic feet and cubic yard. d. Capacity - Liquid: Pint, gallons, quarts, barrel. Dry: Pint, peck, quart, bushel e. Weight - ounces, pounds; pounds and tons. f. Money - U.S. Standard. g. Time - seconds, minute, hour, week, month, year, leap year. h. Temperature - Farenheit.
3 - Teach lesson on similar triangles and figures.	3 - Use protractor and construct similar triangles. For class use bring to class problems that you have gotten from reference books or textbooks that involve the use of similar figures and triangles. Solve them.
4 - Apply formulas to the solution of problems involving diagonals of rectangles, ladder problems, etc.	4 - Derive the formula $c^2=a^2+b^2$

Suggested References to be used in planning the unit:

1 - Textbook

2 - Lennes, Practical Mathematics, Macmillan, 1936.

3 - Schorling and Clark, Mathematics in Life, Macmillan, 1936.

Unit VI - Insurance

Objectives of Unit

1 - To recognize and to appreciate the importance of insurance as a cooperative agency to help the individual meet the economic risks of modern life.

2 - To study the beginning and development of insurance.

3 - To discover its importance and use.

Suggested Activities	Suggested Procedures
1 - Do research work on the historical beginning of insurance.	1 - Make discussion on the marine loans of the Greeks. Report on beginning of direct insurance in Belgium during the 14th century.
2 - Secure a working definition of insurance, premium, beneficiary, and open policy with a definite understanding of each.	2 - Add this definition to the list of words which was started in Unit I.

Suggested Activities	Suggested Procedures
3 - Discuss different kinds of policies. Discuss the advantages and disadvantages of one year, three year, and five year policies.	3 - Included in the kinds of policies would be: fire, insects, loss of property by war, drought, etc. Bring to class policies and calculate the premiums paid for various ages.
4 - Investigate the types of insurance.	4 - Secure policies for class use. These would include property and fire insurance.
5 - Solve problems involving insurance.	5 - Refer to text or to other references.
6 - List type of insurance held by members of the class and by their parents.	6 - Discuss them.

Suggested References to be used in planning the unit:

1 - Textbook

2 - Lennes, Practical Mathematics, Macmillan, 1936.

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